

Comments by George E. Dials before the Blue Ribbon Commission, February 1, 2011, Washington, D.C.

Lessons learned from two quite differently executed U. S. nuclear waste repository programs can provide meaningful insights into effective approaches and/or processes that can be implemented to more assuredly effect a future successful repository program for the disposal of used nuclear fuel and high level wastes. The two repository programs, WIPP and Yucca Mountain, are similar in the duration of their efforts, including site selection time lines, regulatory formulations, and scientific involvement and assessment processes. However, they are distinctly different in ownership and control of the nuclear waste of concern, the regulatory and compliance requirements, the active and passive institutional control periods, and the performance assessment modeling requirements. And, significantly, the programs differ in the most important aspect of all-- that is the success of their programs in terms of getting a licensed repository into continuous, long term operation. After a 24 year site selection, scientific research and evaluation process, and an EPA formulated and managed licensing process, WIPP was licensed in May 1998. It began disposal operations for transuranic waste in March 1999, after adjudication of various litigation challenges filed by opposition groups.

On the other hand, the Yucca Mountain project, which has been ongoing since 1982, with initiation of the specific site selection phase, has been summarily disbanded in the midst of its licensing process. Administrative, managerial, and budgetary actions taken by the current Administration, its Secretary of Energy, and aligned Congressional leadership has, supported by directed actions taken by the regulator and licensing agent (the NRC) forfeited decades of substantial scientific and technical evaluations and assessments and billions of dollars in taxpayer and utility rate-payer funds for primarily political reasons. Notwithstanding the rational basis for the project and the basis of the need for a solution to the used nuclear fuel and high level waste disposal problems, it is unlikely that Yucca Mountain will re-emerge from this progressive, systematic programmatic dismantling.

At their genesis, these two programs were combined, and they had the very same rather simple goal: to permanently remove nuclear waste from the biosphere so as to minimize and/or eliminate risk of adverse affects to the public and the environment and to future generations. Even after having been separated to "ideally" be able to address the very different time scales of concern of the fission products found in used nuclear fuel compared to the very, very long half-lives of the actinides found in the nuclear wastes generated in the nation's nuclear weapons complex, the programs remained linked conceptually especially to the environmental opposition groups. To use a phrase that was (to my knowledge) coined by my MIT thesis advisor, Dr. David Rose, in 1971, the disposal of nuclear wastes is a "socio-technological problem" that is not amenable to purely technical or scientific solutions. Rather this genre of problems usually has long time scales of concern. Furthermore, they require broad social, political, moral, and ethical evaluations and assessments and options development. As well, they demand the formulation of credible, scientifically sound and acceptable solutions.

With these problem characteristics in mind, it seems appropriate and important to undertake a comparative evaluation of the "lessons learned" from the scientific programs, management processes and procedures, organizational concepts (both programmatic and operational), regulatory and compliance frameworks, stakeholder and public communication requirements, and government agency involvement processes. It should be undertaken while the professional staffs and institutional memories and data are readily available for the effort. In this regard, listed below are several programmatic elements worthy of detailed comparative evaluation:

- 1) Nature of the problem; extend of socio-technological aspects;
- 2) Rationalized time-scales of concern; scientific, cultural, and political elements;
- 3) Relevant scientific standards; clearly defined and communicated standards for compliance and regulatory evaluations.
- 4) Desired site characteristics for a repository; process for assessing local and regional public acceptance; the importance of open, transparent public interaction processes.
- 5) Key regulatory safety requirements; fundamental safety concepts that influence public confidence and acceptance.

Lessons learned that are developed through these comparative evaluations may be of particular value as we undertake a new repository program to solve the used nuclear fuel and defense high level waste disposal problems. Programmatic and managerial techniques such as clearly defined scientific objectives, comprehensive and technically credible results, and transparent and justifiable decision making can contribute substantially to a successful future repository site selection, evaluation and licensing effort that will be both timely and cost-effective.

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